VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph beginning on line 20 of page 5 has been deleted in its entirety.

Paragraph beginning on line 17 of page 14 has been amended as follows:

A representative embodiment of an EUV light lithography system ~~120~~ according to the invention is ~~depicted schematically in FIG. 8. The depicted~~ **described below. The** embodiment is a projection-exposure apparatus employing light in the UV range as the exposure-illumination light. The EUV light will have a wavelength between 0.1 and 400 nm preferably between 1 and 50 nm. Projection-imaging is performed using an imaging-optical ~~system 122~~ **system**, which forms a "reduced" (demagnified) image of the pattern defined by the ~~mask 124 on the wafer 126. In FIG. 8, the~~ **mask on the wafer. The** optical axis of the imaging-optical ~~system 120~~ **system** extends in the Z-direction, and the Y-direction is perpendicular to the plane of the page.

Paragraph beginning on line 26 of page 14 has been amended as follows:

As noted above, the pattern to be transferred onto the ~~wafer 126~~ **wafer** is defined by the reflection-type ~~mask 124~~ **mask**, which is mounted on a mask ~~stage 128.~~ **stage.** The ~~wafer 126~~ **wafer** is mounted on a wafer ~~stage 130~~ **stage**. Typically, exposure is performed in a step-and-scan manner, wherein the mask pattern is projected in successive portions ("shot regions") while synchronously moving the mask ~~stage 128~~ **stage** and wafer ~~stage 130~~ **stage** relative to each other as exposure progresses. Scanning of the ~~mask 124~~ **mask** and ~~wafer 126~~ **wafer** typically is performed in a single dimension relative to the imaging-optical ~~system 122.~~ **system.** Upon exposing all the shot regions on the ~~mask 124~~ **mask** onto respective regions of the wafer

surface, exposure of the pattern onto a die of the ~~wafer 126~~ **wafer** is complete. Exposure can then progress stepwise to the next die on the ~~wafer 126~~ **wafer**.

Paragraph beginning on line 8 of page 15 has been amended as follows:

The EUV light used as the illumination light for exposure has low transmittance through the atmosphere. Hence, the optical path through which the EUV light passes desirably is enclosed in a vacuum ~~chamber 132.~~ **chamber .** The vacuum ~~chamber 132~~ **chamber** is evacuated using a suitable vacuum ~~pump 134~~ **pump**. The EUV light desirably is produced by a laser-plasma X-ray source comprising a xenon target gas. The laser-plasma X-ray source comprises a laser ~~source 136~~ **source** (serving as an excitation-light source) and a xenon gas ~~supply 138~~ **supply**. The laser-plasma X-ray source is enclosed by a vacuum ~~chamber 140~~ **chamber**. The EUV light produced by the laser-plasma X-ray source passes through a ~~window 141~~ **window** in the vacuum chamber ~~140~~. ~~window 141~~ **Window** may also be formed as an aperture that permits the laser plasma X-ray source to pass unhindered. It is preferred that the vacuum chamber ~~140~~ is separate from the vacuum ~~chamber 132~~ **chamber** because debris tends to be generated by a ~~nozzle 142 that~~ **nozzle that** discharges the xenon gas.

Paragraph beginning on line 21 of page 15 has been amended as follows:

The laser ~~source 136 is~~ **source is** configured to generate laser light having a wavelength that can be within the range from infrared to ultraviolet. For example, a YAG laser or excimer laser can be used. The laser light from the laser ~~source 136~~ **source** is condensed and irradiated onto the stream of xenon gas (supplied from a gas ~~supply 138)~~ **supply)** discharged from the ~~nozzle 142~~ **nozzle**. Irradiation of the stream of xenon gas causes heating of the xenon gas

sufficiently to form a plasma. Photons of EUV light are emitted as the laser-excited molecules of xenon gas drop to a lower energy state.

Paragraph beginning on line 17 of page 14 has been amended as follows:

A parabolic ~~mirror 144~~ **mirror** is situated in the vicinity of xenon-gas discharge. The parabolic ~~mirror 144~~ **mirror** collects and condenses the EUV light produced by the plasma. The parabolic ~~mirror 144~~ **mirror** constitutes herein the condenser optical system, and the parabolic ~~mirror 144~~ **mirror** is situated such that its focal point is nearly at the locus of discharge of the xenon gas from the ~~nozzle 142~~ **nozzle**. The parabolic ~~mirror 144~~ **mirror** comprises a multilayer film suitable for reflecting the EUV light. The multilayer film typically is provided on the concave surface of the parabolic ~~mirror 144~~ **mirror**. The EUV light reflected from the multilayer film passes through the ~~window 141~~ **window** of the vacuum ~~chamber 140~~ **chamber** to a condenser ~~mirror 146~~ **mirror**. The condenser ~~mirror 146~~ **mirror** condenses and reflects the EUV light to the reflection-type ~~mask 124~~ **mask**. To such end, the condenser ~~mirror 146~~ **mirror** also comprises a surficial multilayer film that is reflective to EUV light. EUV light reflected from the condenser ~~mirror 146~~ **mirror** illuminates the prescribed shot region on the reflection-type ~~mask 124~~ **mask**. As referred to herein, the parabolic ~~mirror 144~~ **mirror** and condenser ~~mirror 146~~ **mirror** collectively comprise the "illumination system." ~~of the FIG. 8 apparatus.~~

Paragraph beginning on line 17 of page 14 has been amended as follows:

The reflection-type ~~mask 124~~ **mask** is configured with a multilayer EUV-reflective surface as described above, as further description of the ~~mask 124~~ **mask** is omitted here. As the EUV light reflects from the ~~mask 124~~ **mask**, the EUV light becomes "patterned" with pattern

data from the ~~mask 124~~ **mask**. The patterned EUV light passes through the projection ~~system 122~~ **system** to the ~~wafer 126~~ **wafer**.

Paragraph beginning on line 21 of page 16 has been amended as follows:

In one embodiment, the imaging-optical ~~system 122~~ **system** comprises four reflection mirrors: a concave first ~~mirror 150a~~ **mirror**, a convex second ~~mirror 150b~~ **mirror**, a convex third ~~mirror 150c~~ **mirror**, and a concave fourth ~~mirror 150d~~ **mirror**. Each of the ~~mirrors 150a-150d comprises~~ **mirrors comprises** a multilayer film (reflective to EUV light) applied to a backing material (article). The ~~mirrors 150a-150b in~~ **mirrors in** this embodiment are arranged so that their respective optical axes are coaxial with each other.

Paragraph beginning on line 27 of page 16 has been amended as follows:

To prevent obstructing the optical path defined by the respective ~~mirrors 150a-150d~~ **mirrors**, appropriate cutouts are provided in the first ~~mirror 150a, the second mirror 150b, and the fourth mirror 150d. (In FIG. 8, the dashed-line portions of the mirrors indicate the respective cutouts.) An aperture stop (not shown)~~ **mirror, the second mirror, and the fourth mirror. An aperture stop** is provided at the position of the third ~~mirror 150c~~ **mirror**.

Paragraph beginning on line 4 of page 17 has been amended as follows:

The EUV light reflected by the reflection-type mask 18 is reflected sequentially by the first ~~mirror 150a through~~ **mirror through** the fourth ~~mirror 150d to~~ **mirror to** form a reduced image of the mask pattern, based on a prescribed demagnification ratio β (for example β - 1/4,

1/5, or 1/6) within the respective shot region on the ~~wafer 126.~~ **wafer.** The projection ~~system 122~~ **system** is configured so as to be telecentric on its image side (wafer side).

Paragraph beginning on line 9 of page 17 has been amended as follows:

The reflection-type ~~mask 124~~ **mask** is supported, at least in the X-Y plane, by the movable reticle ~~stage 128.~~ **stage.** The ~~wafer 126~~ **wafer** is supported, desirably in each of the X-, Y-, and Z-directions by the movable wafer ~~stage 130~~ **stage**. During exposure of a die on the ~~wafer 126~~ **wafer**, while EUV light is irradiated to each shot region on the ~~mask 124~~ **mask** by the illumination system, the ~~mask 124~~ **mask** and ~~wafer 126~~ **wafer** are moved in a coordinated manner relative to the imaging-optical ~~system 122 at~~ **system at** a prescribed velocity according to the demagnification ratio of the imaging-optical ~~system 122~~ **system**. Thus, the mask pattern is scanned progressively and exposed within a prescribed shot range (for a die) on the ~~wafer 126~~ **wafer**.

Paragraph beginning on line 18 of page 17 has been amended as follows:

During exposure, to prevent gases generated from the resist on the ~~wafer 126~~ **wafer** from depositing on and adversely affecting the mirrors ~~150a-150d~~ of the imaging-optical ~~system 122,~~ **system,** the ~~wafer 126~~ **wafer** desirably is situated behind a ~~partition 152. The partition 152 defines an aperture 152a through~~ **partition. The partition defines an aperture through** which the EUV light can pass from the ~~mirror 150d to~~ **mirror to** the ~~wafer 126~~ **wafer**. The space defined by the ~~partition 152 is~~ **partition is** evacuated by a separate vacuum ~~pump 154~~ **pump**. Thus, gaseous contaminants produced by irradiation of the resist are prevented from depositing on the ~~mirrors 150a-150d or~~ **mirrors or** on the ~~mask 126~~ **mask**, thereby preventing deterioration of optical performance of these components.